



**NOAA Teacher at Sea**  
**Heather Diaz**  
**Onboard NOAA Ship DAVID STARR JORDAN**  
**July 6 – 15, 2006**

**NOAA Teacher at Sea: Heather Diaz**

NOAA Ship DAVID STARR JORDAN

Mission: Juvenile Shark Abundance Survey

Day 7: Wednesday, July 12, 2006

**Science and Technology Log**

There was no swordfish, set done last night because of our excursion to Catalina Island. Instead, we set our first line (shark line) at 6am. We hauled in the line around 10am. We caught 10 makos, 4 blues, 1 lancetfish, 3 pelagic rays, and 2 molas. I had the opportunity to videotape the entire haul, which turned out to be one of our most productive. 1 mako died today during the haul because it had swallowed the hook and most likely suffered an internal injury. He was measured, weighed, and dissected for further research. One of the makos we caught during this set was among the largest three we caught during this entire leg, and it was really interesting to see such a large shark, so close!

We set our second line at around 12 noon. We hauled it in around 4pm. We caught 7 makos and 2 blues. Two of the makos we caught during this set were among the largest three we caught during this entire leg.

**Personal Log**

With our first set, things started off right off the bat with several makos. Then, we got 2 humongous Sunfish (mola-mola)...and I mean they were huge! Then, we got a huge mako. He was almost 2 meters long. It was really cool. He was almost as long as the cradle itself! I couldn't believe it.

Everyone was super excited at that point. During the whole commotion, one mako was pulled over the side nearly dead. We also had a lancet-fish which they



This Mako shark didn't survive being on the longline. The coloring of the shark is truly beautiful, and their skin is very smooth in one direction, and like sandpaper in the other. If you look closely, you can see little spots on his nose, which are actually part of his hunting and defense mechanism, and he is able to "detect" things in the water from a long way away. It is also interesting to note that the Mako does not have a protective "eyelid", unlike the Blue sharks we encountered on this survey. Karina and João have helped to preserve the jaw, and I cannot wait to show it to my students!

hauled over the side while we were dealing with the monster mako in the cradle....and that was very much alive. It was flipping all over the place. Sean picked him up, took the hook out, and tossed it overboard. After we were all done and all the animals had been processed, we went over to look at the mako that they had brought on deck. Although the mako was near death, it appeared to be still breathing a little, though it might have been a lingering reflex reaction. After examining him on the deck, they weighed him and then started to dissect him. I have most of the dissection on tape. It was very interesting to see where all the internal organs are located and to see how their muscle tissue is designed. Dr. Heidi Dewar explained how they use their muscle tissue design to actually preserve body heat. It was really fascinating. I am excited to show my students her "lecture" on the muscles, and to share with them the dissection video, so that they can see what a shark looks like on the inside. I think they will enjoy it.

During the second set, I was allowed to get down on the platform with the first two sharks...the first one, Dr. Suzy Kohin, Chief Scientist just explained everything. The second one, I was able to get in there and actually do the stuff! I collected the DNA sample of his dorsal fin...I put the tag in his dorsal fin...and, I gave him a shot of OTC in the ventral area. I also got to take its length measurement, which was freaky because I had to grab its tail and pull it straight. I don't think the shark appreciated that much, and he squirmed a bit. He was also bleeding. Dr. Suzy Kohin, the Chief Scientist, said that he was bleeding a bit because he had swallowed the hook. I opted not to do the spaghetti tag (which involves shoving this metal tip into their skin) and I opted not to cut the hook out of its mouth,...it just seemed really, really, really REAL...and I didn't want to mess up and come out of it missing a hand or something...or worse, having unintentionally hurt the animal. Anyhow, I gave my kneepads over to Daniele who jumped in and finished the haul for me on the platform while I did the gangions. Which, turned out to be too bad, since we got some really huge makos on this haul...everyone was very excited about them. I think the largest was about 197cm. They put special tags in the really large makos, which they called a PAT (Pop-Up Archival Tag). They explained that these tags, which look more like turkey basters, are used to report data on temperature, depth, and even longitude so that they can better track the makos and learn more about their behaviors. They are especially looking for information about diving behaviors and their temperature and depth preferences. I would love to see what they find out from these fish!

They also use a SPOT (Smart POsition and Temperature) tag. This is almost translucent and is bolted the dorsal fin (only on larger sharks). It looks a little like a computer mouse and is oval shaped. This tag sends radio signals to a satellite whenever the animal is near the surface, and they can use this information to track precisely where the animal is in the ocean.